

Figure 1 - FLUPSY

Provisional Patent Application

AN INTEGRATED SYSTEM FOR SHELLFISH PRODUCTION: Encompassing Hatchery, Nursery, Growout, and Broodstock Conditioning Phases

Inventor: Russell Patton Davis June 20, 2000

FIGURE 1 - FLUPSY (Floating Upweller System)

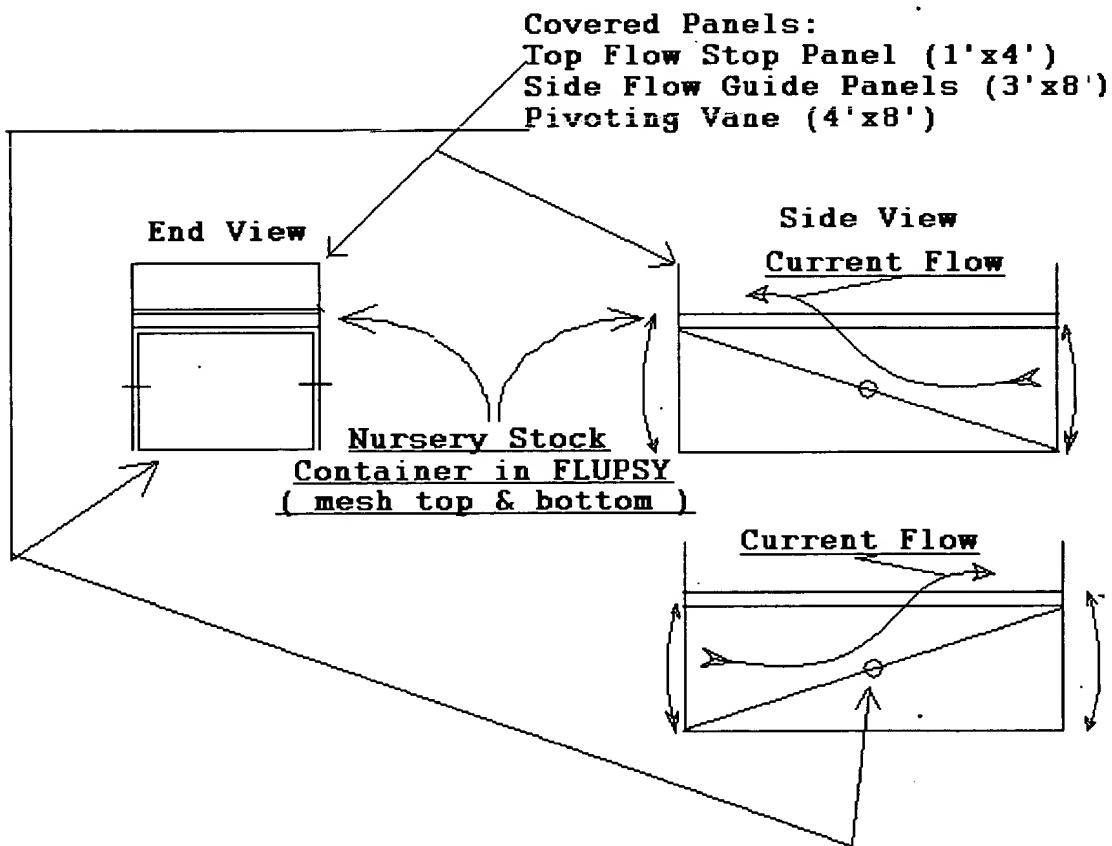


Figure 2 - BUPSY

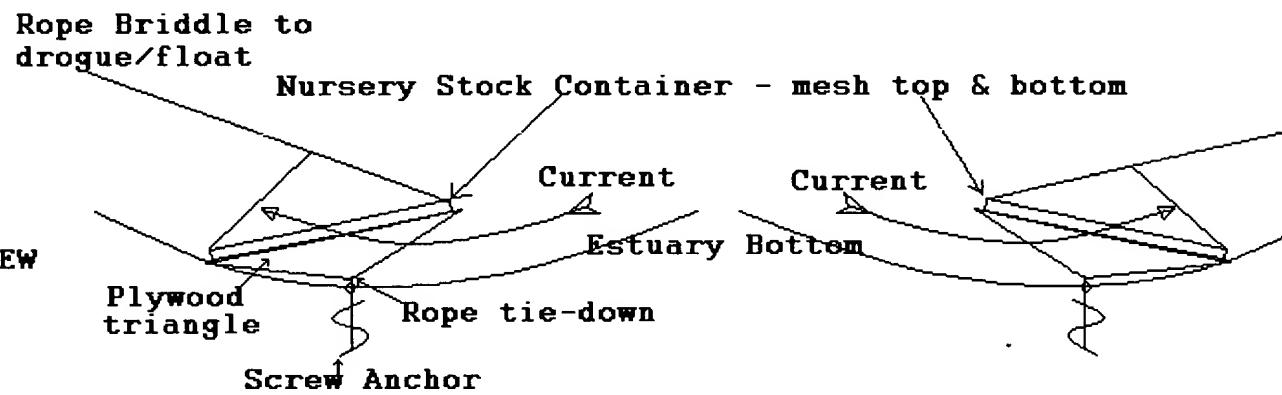
Provisional Patent Application

AN INTEGRATED SYSTEM FOR SHELLFISH PRODUCTION: Encompassing Hatchery, Nursery, Growout, and Broodstock Conditioning Phases

Inventor: Russell Patton Davis June 20, 2000

FIGURE 2 - BUPSY (Bottom Upweller System)

PCT/US2001/23350



SIDE VIEW

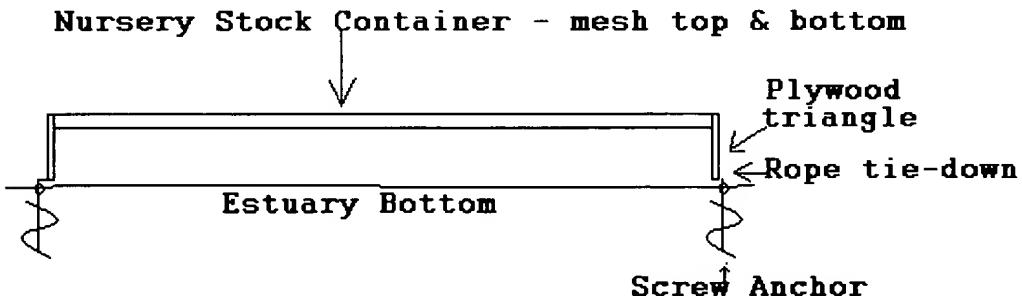


Figure 3 - Nursery Stock Container

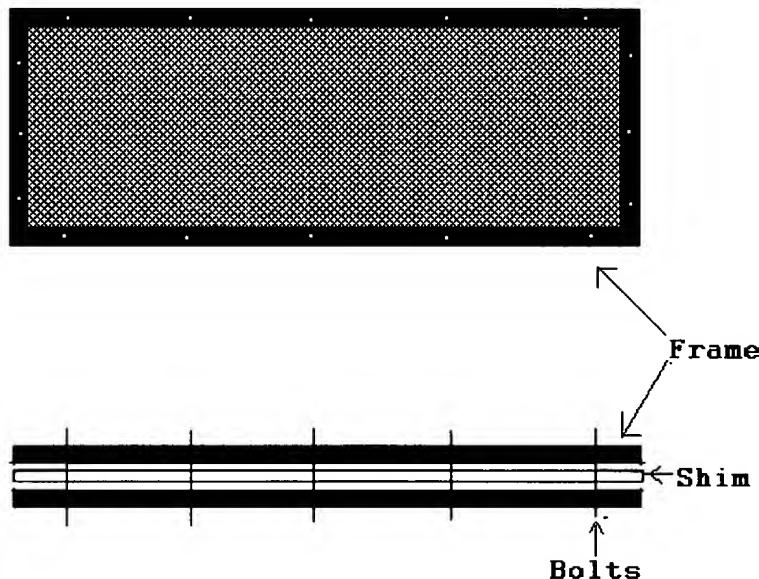
Provisional Patent Application

AN INTEGRATED SYSTEM FOR SHELLFISH PRODUCTION: Encompassing Hatchery, Nursery, Growout, and Broodstock Conditioning Phases

Inventor: Russell Patton Davis June 20, 2000

Figure 3 - Nursery Stock Container - Mesh top and bottom, with solid and compressible shims, used in both FLUPSY and BUPSY

TOP VIEW - Two ridged frames, each covered with mesh (sized to retain shellfish), bolted together.



The frames are separated with a combination of ridged and compressible (closed cell foam) shims so that the shellfish are gently but securely held by the assembly.

SIDE VIEW

Figure 4 - End View of Spawntoon

Provisional Patent Application

AN INTEGRATED SYSTEM FOR SHELLFISH PRODUCTION: Encompassing
Hatchery, Nursery, Growout, and Broodstock Conditioning Phases

Inventor: Russell Patton Davis June 20, 2000

Figure 4 - End View of Spawntoon Unit
consisting of FLUPSY sub-units and hatchery pools

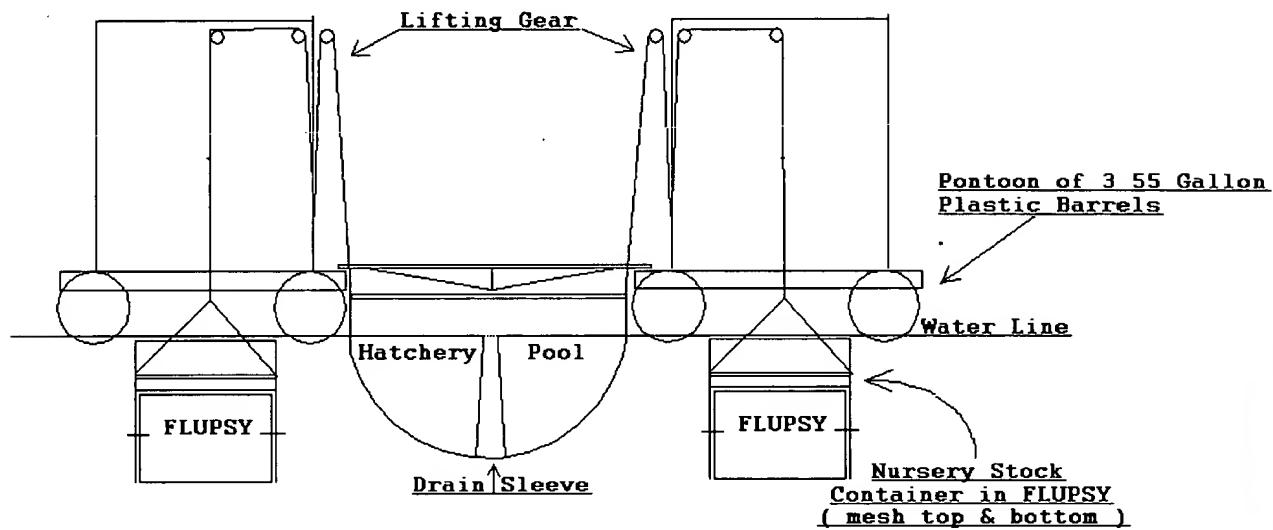


Figure 5 – Drain Device for floating hatchery live-well

**Figure 5) Hatchery Live-Well
Filled with filtered water
for spawn. The drain device
is plugged. The ridged frame
of the Hatchery Pool is either
held above the water by ropes
or supported by the floatation
of the live-well itself.**

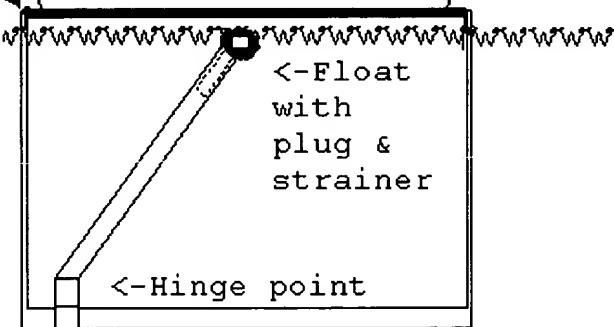


Figure 6 – SpawnToon Motorboat "The Mama Cass Ostrea"

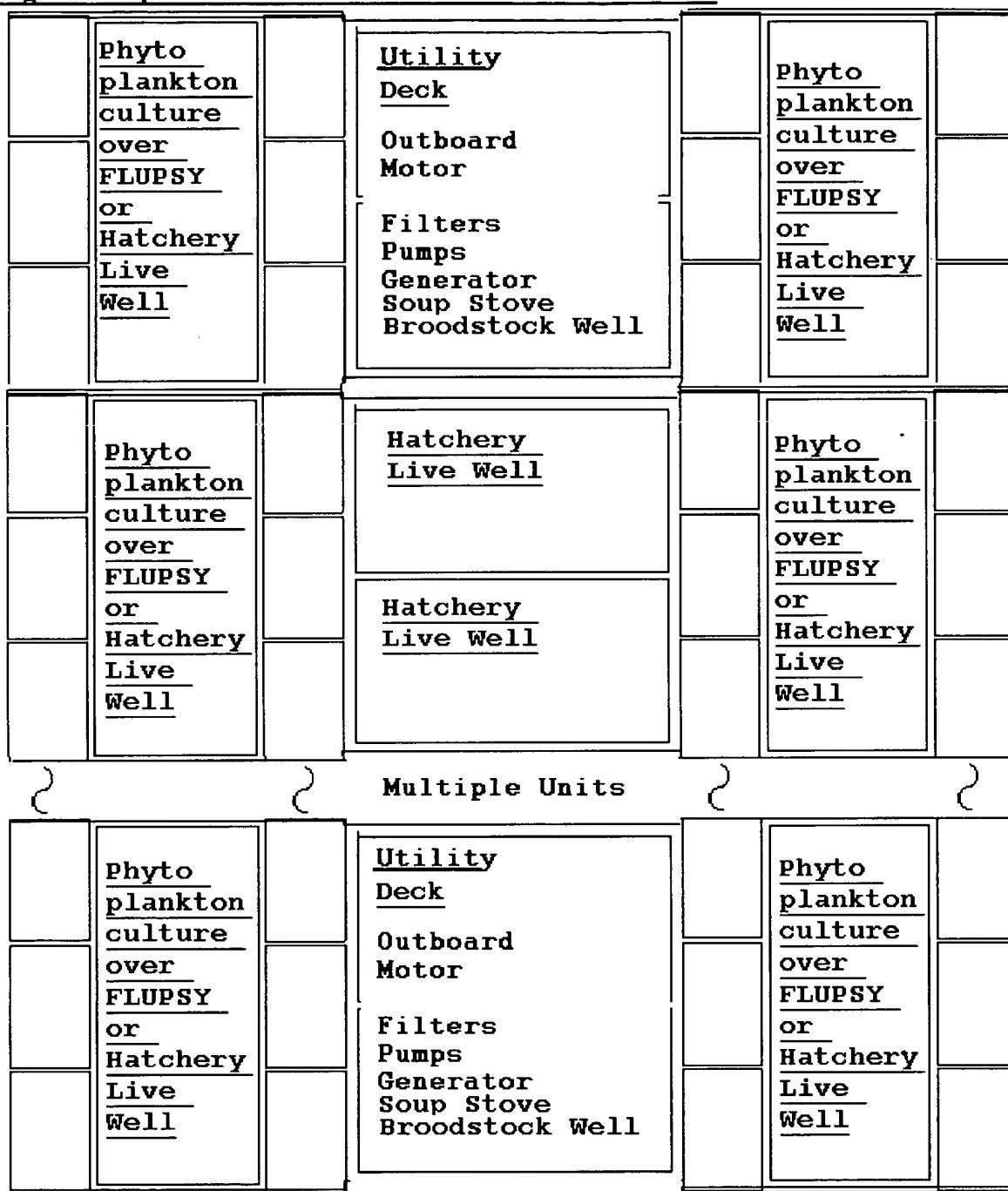


Figure 7 – Phytoplankton Culture: Culture Bag w/fittings, Stretcher resting on two pontoons

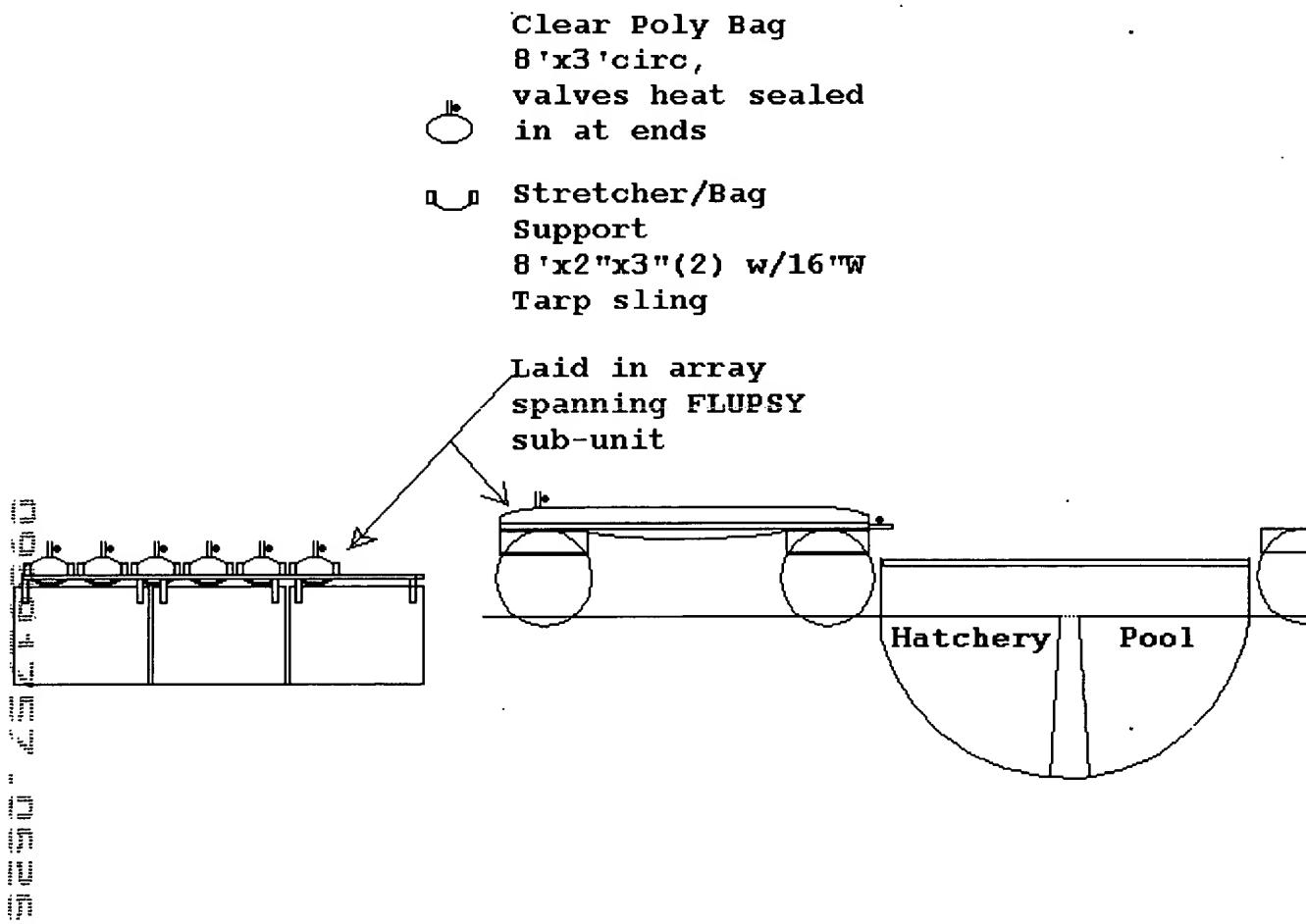


Figure 8 – Hatchery Live Well Drain-Sleeve and Spawn Catcher

Figure 8A) Hatchery Pool filled with filtered water for spawn. The drain device is plugged. The ridged frame of the Hatchery Pool is held above the water by ropes.

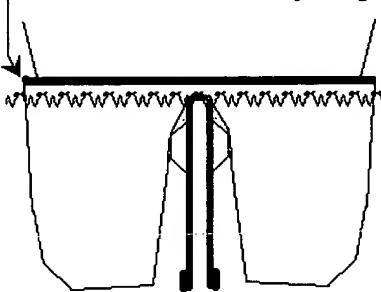


Figure 8B) Hatchery Pool being drained. The plug is replaced with the Spawn Catcher assembly. The lifting ropes are weighted with buckets of water so that the pull on the lines will cause the water to drain through the Spawn Catcher. The drain sleeve accordions down so the drain opening remains just under the surface of the water.

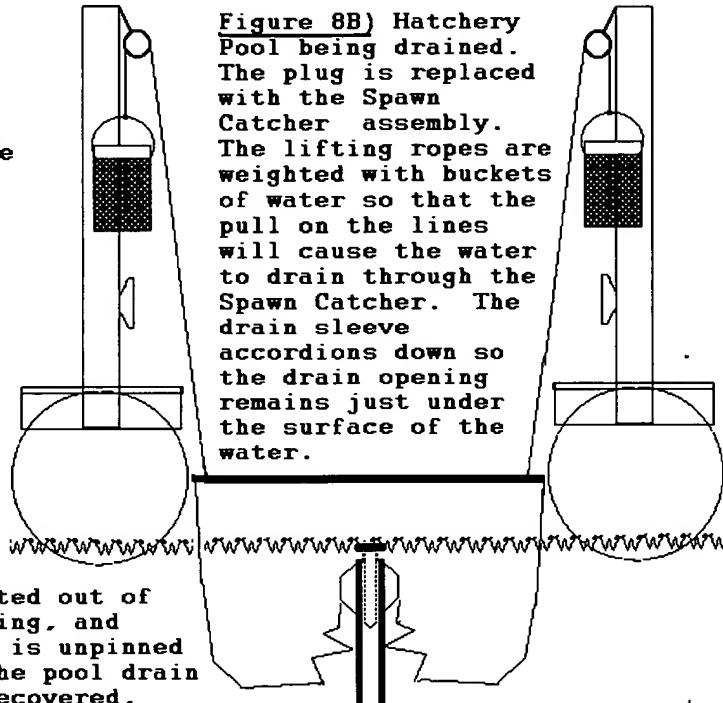


Figure 8D) Hatchery Pool lifted out of the water for cleaning, sunning, and maintenance. The drain pipe is unpinned from the collar affixed to the pool drain sleeve so the spawn can be recovered. Dead spawn and feces on the bottom do not drain out until the drain pipe and Spawn Catcher assembly are unpinned and removed. The spawn are rinsed out into a filled pool waiting for them.

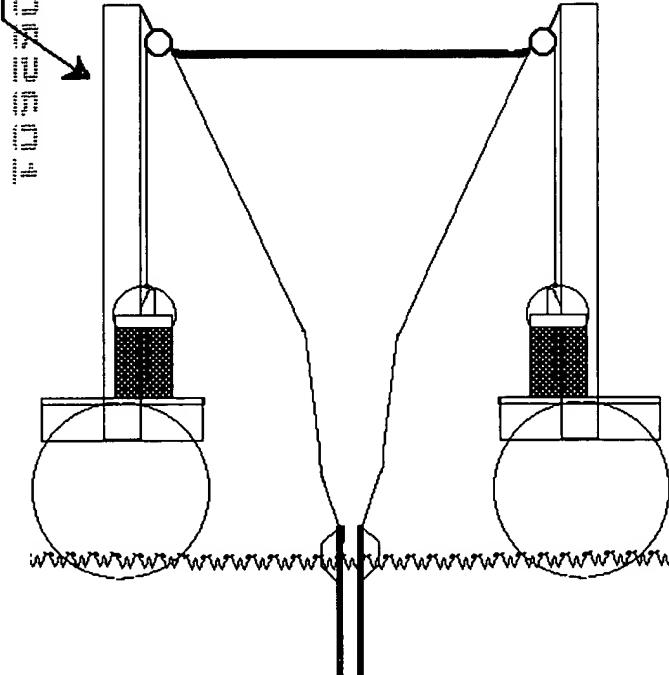


FIGURE 8C)

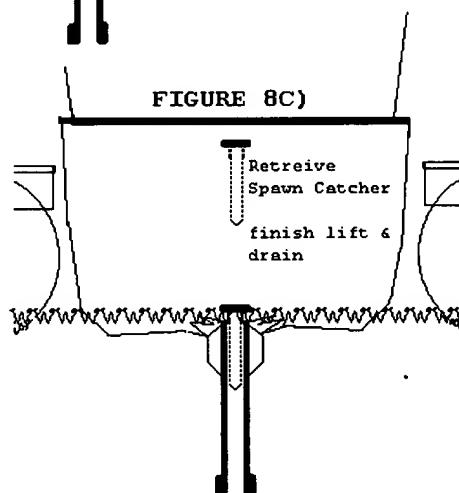


Figure 9 - Outboard Motor Mount (with DAVIS NOZZLE) slung underneath SpawnToon deck, Profile of the Tubular Shroud surrounding the propeller and bolted to the cavitation plate

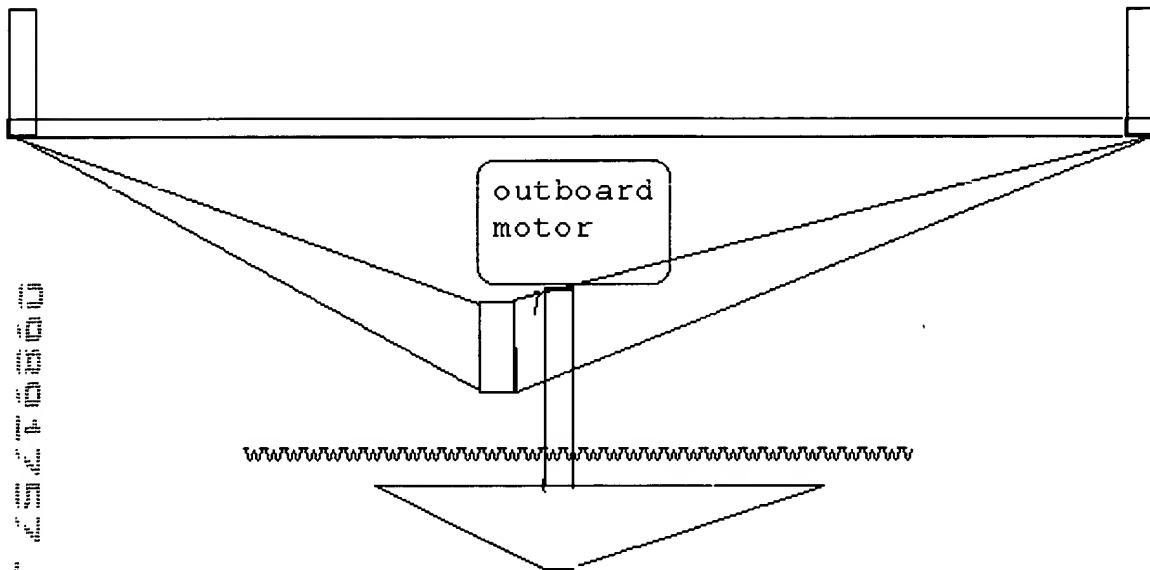


Figure 10 - Davis Harpoon anchor

Figure 10) DAVIS HARPOON ANCHOR

Made from 2 inch dia.
galvanized pipe 36 inches
long

one half the pipe is cut from one half the length to form a trough

the trough portion is bent outward and cut to form a point on the end

a bolt for
attaching the
anchor line is
placed in tube

anchor is washed
into place much
like a piling or
bulkheading

Figure 11 - TWWELLER

Figure 11 A) TWWELLER : side view

Two Way Upweller/Downweller Shellfish Growing Device

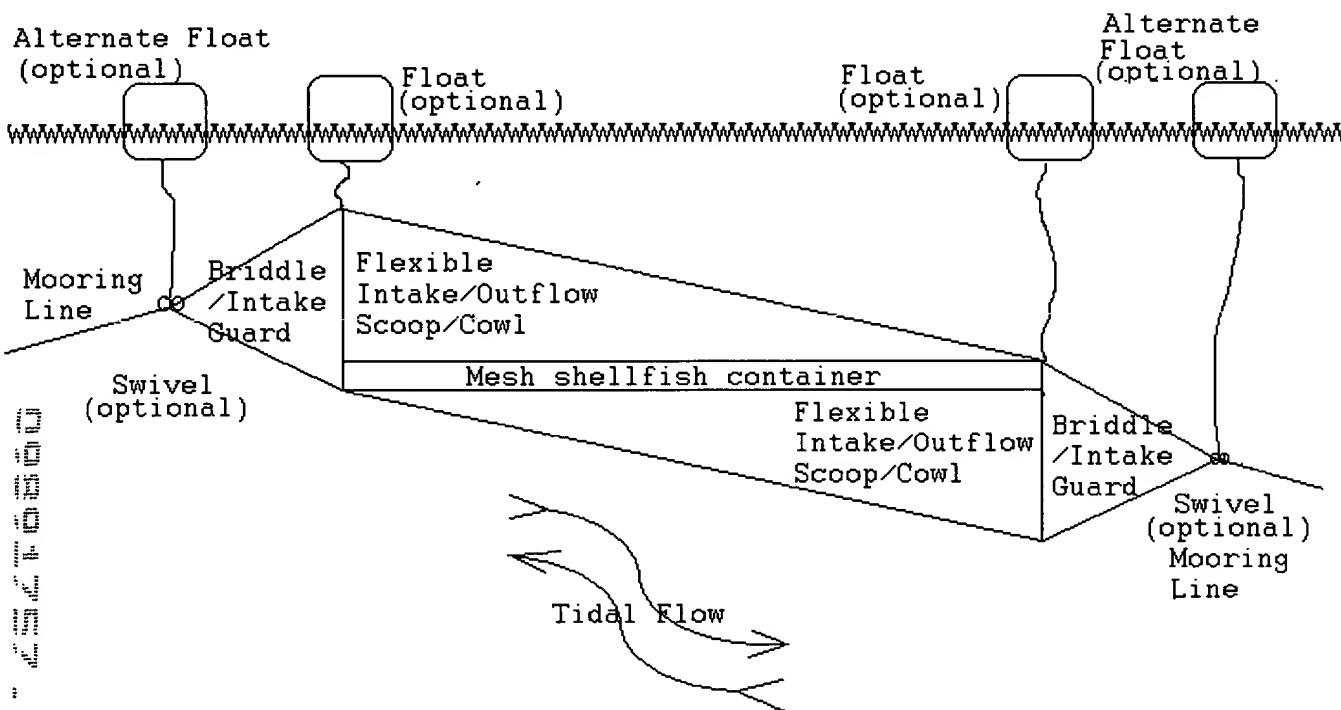


FIGURE 11 B) TWWELLER: end view

Rotating Option
on swiveled mooring

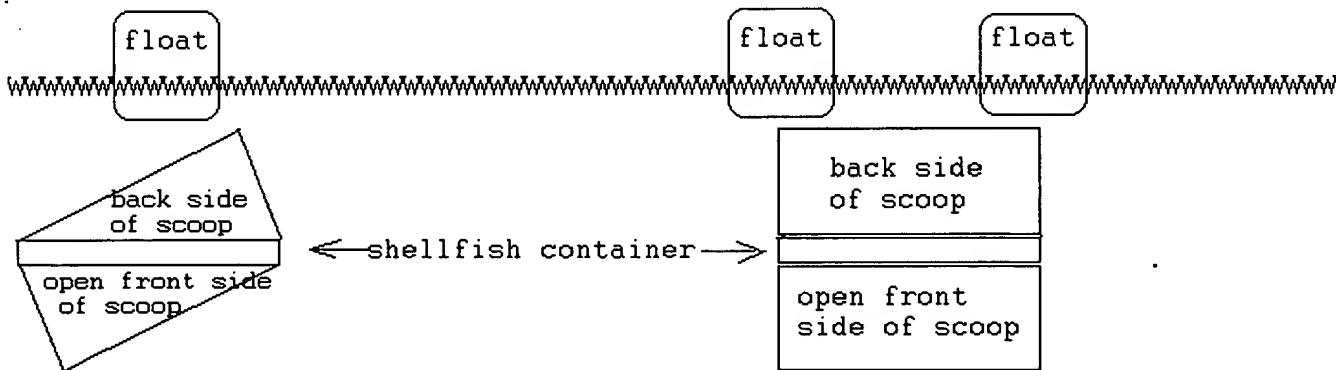
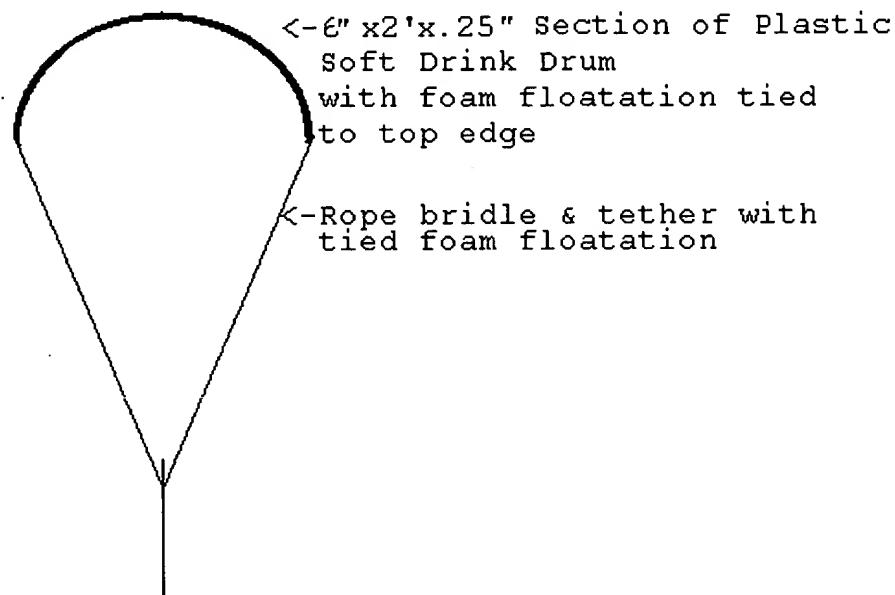


Figure 12 – Float-Drogue

Figure 12) Float-Drogue



6/26/01 9:10 AM Russell P Davis (757)340-0651

Page 87 of 91

Figure 14 – Resuspension Drag Foil of CLAIM 17

Figure 14)

Resuspension Drag Foil

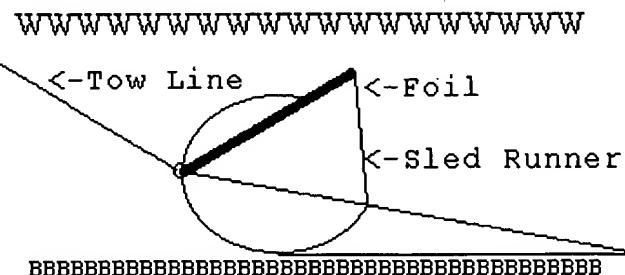


Figure 15 – Waffle Bulkhead

Figure 15) Waffle Bulkhead

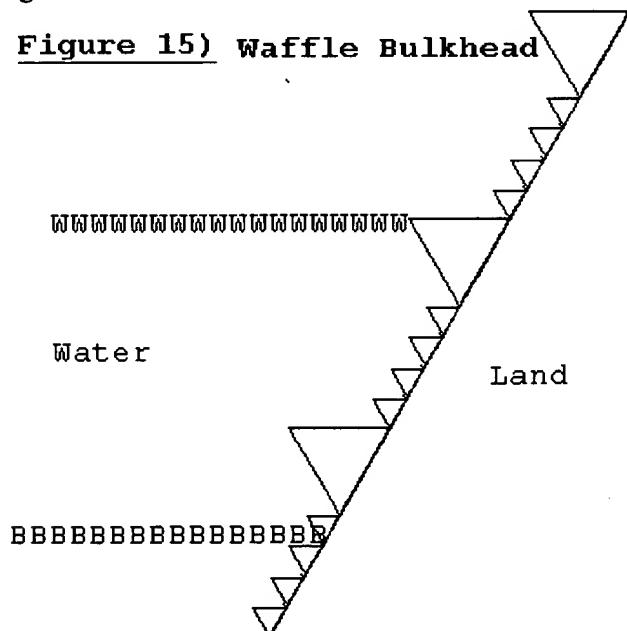


Figure 16 – Shellfish Geostructure of CLAIM 11

Figure 16)

**Shellfish Reef Geo-Structures
of Spartina Grass and Clam
Predator Exclusion Net**

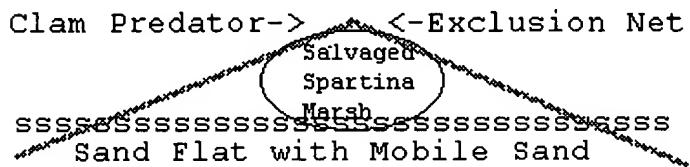


Figure 17 – BUPSY of CLAIM 8 (low current or below channel)

Figure 17) BUPSY for lower current
or under possible boat traffic

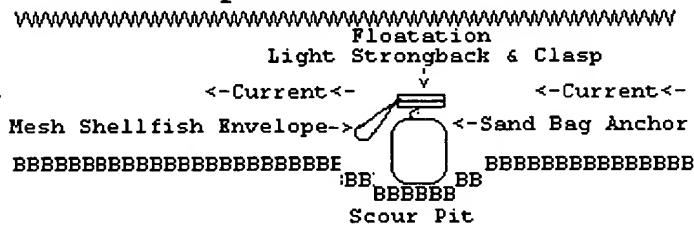


Figure 18 – Shellfish Hatchery-Nursery Container of CLAIM 16: Set of two nested open top Self Cleaning screen set of CLAIM 7 used by the Marsupium

Figure 18)

**Shellfish Hatchery/Nursery
Container Assembly Consisting of
Two Nesting Open-Top Mesh
Covered Box Frames**

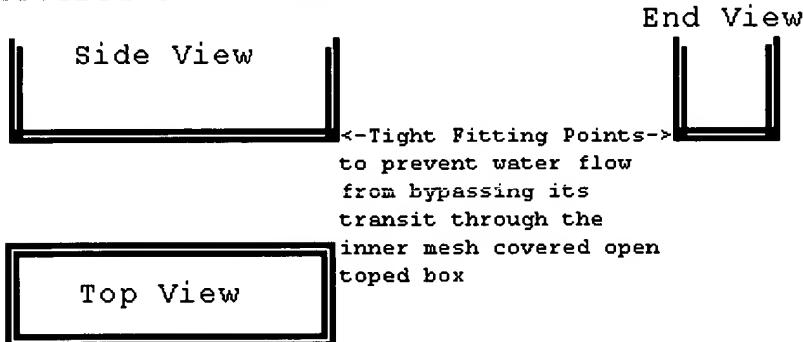


Figure 19 – Shellfish:SAV Polyculture Groin Substitute of CLAIM 18
Figure 19)

**Living Groin made from a bed of Shellfish
Predator Exclusion Net, & Sub-aquatic
Vegetation**

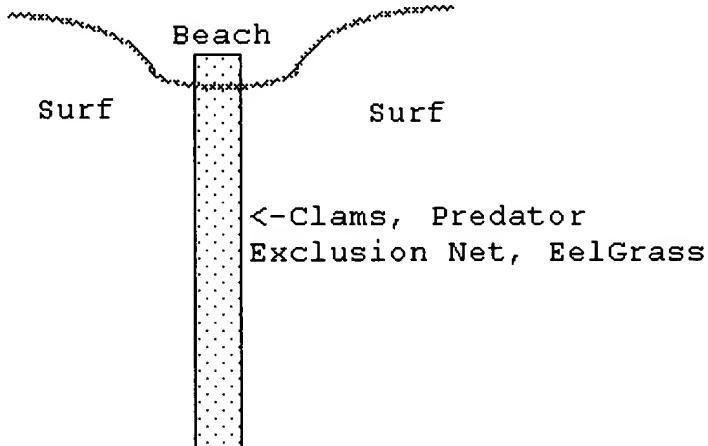


Figure 20 Foil Array of CLAIM 10 used for current powered directional sediment transport

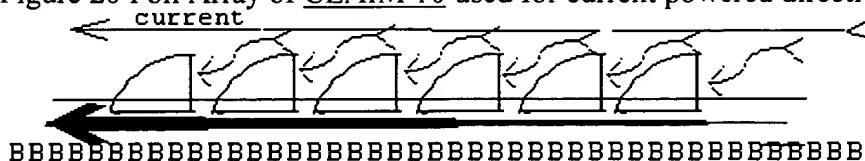
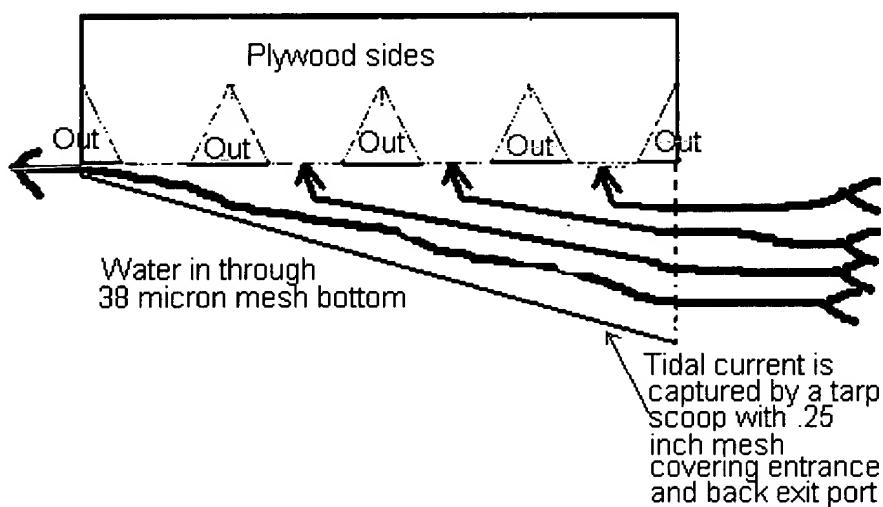


Figure 21 Grounding Tolerant FLUPSY scoop of CLAIM 9 servicing a crenellated Marsupium.
Side View



Water out through triangular ports in the side
after passing through a 38 micron mesh crenellation panel

Plywood panel separates inbound water from outbound
water in the crenellation